

REMARKS

Claims 1-12 and 15-26 remain in this application. Claims 13 and 14 have been canceled without prejudice. Claims 1, 15, and 24 have been amended; claims 25 and 26 have been added. No new matter has been added. Reconsideration is respectfully requested.

Applicant gratefully acknowledges the interview conducted between the examiner, George C. Neurater, Jr., the examiner's supervisor, Patrice Winder, and applicant's representative, Daniel Kligler, registration number 41,120, on May 6, 2004. The interview was with regard to the rejection of claims 1, 13, 14, 15, and 24. Agreement was reached, including cancellation of claims 13 and 14, and addition of claims 25 and 26. During the interview, and as stated in the Interview Summary, the examiner indicated that if the language of the immediately following paragraph is included in claim 1, and corresponding language in claims 15 and 24, claims 1, 15 and 24 as amended would be patentable over the cited art.

Language to be included in claim 1: "... which is adapted to perform an arbitration between the plurality of clients, responsive to the linked list and the number of the access requests recorded in the access register, and to decide, responsive to the arbitration, which of the plurality of clients is given access to the resource."

Claims 1-12 and 15-24 were rejected under 35 U.S.C. §103(a), as being unpatentable over Moyal (U.S. Patent 6,445,680 B1) in view of Lau et al. (U.S. Patent 5,893,162). Applicant has amended independent claims 1, 15, and 24 to sharpen the differences of the claims over the cited art.

Claims 1 and 15 as amended recite an arbiter and a method for arbitrating between clients requesting access to a computing resource. A memory comprises a request register which records a number of access requests for each client. The memory also comprises a next-client pointer, which records an identification of a client making a subsequent access request, so as to form a linked list of the requests. Logic circuitry updates the linked list in response to the numbers of access requests. Based on the linked list and the numbers of access requests, the circuitry arbitrates between the clients. As a result of the arbitration, a decision is made as to the client in the list that is given access to the resource. By recording and updating the number of requests from clients as access is provided, the amount of access provided may be tracked, and the linked list may be updated as necessary.

Moyal describes an arbiter which receives flags from respective source queues, indicating if each queue is empty or not (column 6 line 63 – column 7 line 4). The arbiter also receives "backpressure" information which is a single bit for each source, showing whether a source is permitted to transmit data or not (column 5 lines 7-11 and column 7 lines 18-21). A "Non Empty Source Queue" (NESQ) linked list

is built which uses the flags and the backpressure bits (Fig. 5A and Fig. 6A, column 7 line 43 – column 8 line 11) to decide which source on the list is to transmit data. As described by Moyal (column 4 lines 6-22, column 6 lines 28-37 and 46-49) the NESQ list is a least recently used (LRU) list.

However, Moyal neither tracks a number of requests in his sources, nor updates a linked list in response to such a number. Thus, Moyal neither teaches nor suggests recording the number of requests, updating the linked list in response to the number, and performing an arbitration in response to the updated linked list and to the number of requests, as is required by amended claims 1 and 15.

Lau's disclosure is directed to dynamic management of a shared memory, based on linked lists, for an ATM destination switch. Lau tracks data flowing into and out of a RAM, using linked lists which have counters. (The RAM is used as a "pre-buffer" before output buffers.) Each counter indicates the number of blocks within each specific list, but is not used as a count of a number of requests, or for arbitration. Rather, the counter enables tracking of head and tail pointers for each list. If an output buffer is full, data is stored in the RAM; when an output buffer is available, data is read from the RAM (Lau column 4 lines 54-63). However, Lau does not relate to arbitration in any way and his linked lists are not used for any kind of decision as to which of a number of requests is given access to a resource. Careful inspection of the whole of Lau's disclosure shows no reference whatsoever to performing an arbitration between his output buffers. Thus, Lau neither teaches nor suggests performing an arbitration in response to a linked list and to a number of requests, as is required by amended claims 1 and 15.

Claims 1 and 15 are therefore believed to be patentable over the cited art.

In view of the patentability of independent claims 1 and 15, claims 2-12 and claims 16-23, which respectively depend from these claims, are also believed to be patentable.

Claim 24 as amended recites a method for arbitrating between clients requesting access to a computing resource. A memory comprises a request register which records a number of access requests for each client, and a linked list of the clients is formed from the numbers of access requests. Logic circuitry, of a size independent of the number of clients requesting access to the resource, performs an arbitration responsive to linked list and the number of access requests. In response to the arbitration, the circuitry decides which client accesses the resource.

As argued above with respect to claims 1 and 15, Moyal neither teaches nor suggests recording a number of requests, updating the linked list in response to the number, and performing an arbitration in response to the updated linked list, as is also required by claim 24. As is further argued above with respect to claims 1 and 15, Lau neither teaches nor suggests performing an arbitration in response to a

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linked list, as is required by claim 24.

Claim 24 is therefore believed to be patentable over the cited art.

Claims 25 and 26, which respectively depend from claim 1 and claim 15, recite incrementing a number of requests in response to receiving a further request for access to a resource. The claims also recite decrementing the number of requests on completion of a request for the resource which is in progress. In view of the patentability of claims 1 and 15, claims 25 and 26 are believed to be patentable over the cited art.

Applicant has studied the additional prior art made of record by the Examiner. Applicant believes the amended claims in the present patent application to be patentable over these references, as well, whether taken alone or in combination with other references.

Applicant believes that the above amendments and remarks are fully responsive to all of the grounds of rejection raised by the Examiner. In view of these amendments and remarks, applicant respectfully submits that all of the claims currently pending in the present application are in order for allowance. Notice to this effect is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'S. Peter Ludwig', written over a horizontal line.

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